IFW AF

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Re:	Application of:	**Clemens SCHWAB**		
	Serial No.:	10/578,461	Confirmation No.:	2110
	Filed:	May 8, 2006		
	For:	**FUEL CELL SYSTEM WHICH CAN BE USED IN A MOBILE MANNER WITH AN ADSORPTION ACCUMULATOR**		
	Art Unit:	1795		
	Examiner:	Karie Amber O'NEILL		
	Customer No.:	23280		
	Atty. Docket:	510.1157		

Mail Stop: APPEAL BRIEF – PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

August 5, 2009

APPELLANTS' BRIEF UNDER 37 C.F.R. § 41.37

Sir:

Appellants submit this brief for the consideration of the Board of Patent Appeals and Interferences (the "Board") in support of their appeal of the Final Rejection dated March 23, 2009 in this application. The statutory fee of $540.00 for filing an appeal brief is paid concurrently herewith.

REAL PARTY IN INTEREST

The real party in interest is Daimler AG, a corporation having a place of business in Stuttgart, Germany and the assignee of the entire right, title and interest in the above-identified patent application. The invention was assigned to Daimler AG by a chain of assignments originating from inventor Clemens Schwab. The most recent assignment was recorded on January 31, 2008 at reel 020442, frame 0893.

I. RELATED APPEALS AND INTERFERENCES

Appellants, their legal representatives, and assignee are not aware of any appeal, interference or judicial proceeding that directly affects, will be directly affected by, or will have a bearing on the Board's decision in this appeal.

II. STATUS OF CLAIMS

Claims 5 to 14 are pending. Claims 1 to 4 have been canceled. Claims 5 to 14 have been finally rejected as per the Final Office Action dated March 23, 2009.

The rejections to claims 5 to 14 thus are appealed. A copy of pending claims 5 to 14 is attached hereto as Appendix A.

III. STATUS OF AMENDMENTS AFTER FINAL

No amendments to the claims were filed after the final rejection. An Advisory Action was issued on June 2, 2009. A Notice of Appeal was filed on June 23, 2009 and received by the U.S.P.T.O. on June 29, 2009.

IV. SUMMARY OF THE CLAIMED SUBJECT MATTER

Independent claim 5 recites a fuel cell system for mobile use comprising a fuel cell unit for generating electrical energy and fuel cell waste products (e.g., fuel cell unit 1 in Fig. 1; specification at page 4, lines 19 to 28, paragraph [0019]); a cooling circuit assigned to the fuel cell unit and having a heat exchanger downstream of the fuel cell unit (e.g., cooling circuit 4, 5 and heat exchanger 2 in Fig. 1; specification at page 4, line 30 to page 5, line 2, paragraph [0020]); an adsorption accumulator assigned to the fuel cell unit and forming a heat store adapted to release heat when adsorbing the fuel cell waste products, the adsorption accumulator being operatively thermally connected to the heat exchanger (e.g., adsorption accumulator or heat store 3 in Fig. 1; specification at page 5, lines 11 to 30, paragraphs [0022] to [0024]); a first line connected to the fuel cell unit discharging the fuel cell waste products from the fuel cell unit (e.g., line 10 in Fig. 1; specification at page 5, lines 13 to 16, paragraph [0022]); and a second line connecting the first line to the adsorption accumulator for feeding the fuel cell waste products to the adsorption accumulator (e.g., line 12 in Fig. 1; specification at page 5, lines 13 to 16, paragraph [0022]).

Independent claim 7 recites a method for operating a fuel cell system for mobile use, the fuel cell system including a fuel cell unit for generating electrical energy and fuel cell waste products (e.g., fuel cell unit 1 in Fig. 1; specification at page 4, lines 19 to 28, paragraph [0019]), a cooling circuit assigned to the fuel cell unit and having a heat exchanger downstream of the fuel cell unit (e.g., cooling circuit 4, 5 and heat exchanger 2 in Fig. 1; specification at page 4, line 30 to page 5, line 2, paragraph [0020]), an adsorption accumulator assigned to the fuel cell unit and forming a heat store adapted to release heat when adsorbing the fuel cell waste products, the adsorption accumulator being operatively thermally connected to the heat exchanger (e.g., adsorption accumulator or heat store 3 in Fig. 1; specification at page 5, lines 11 to 30, paragraphs [0022] to [0024]), a first line connected to the fuel cell unit for discharging the fuel cell waste products from the fuel cell unit (e.g., line 10 in Fig. 1; specification at page 5, lines 13 to 16, paragraph [0022]), and a second line connecting the first line to the adsorption accumulator for feeding the fuel cell waste products to the adsorption accumulator (e.g., line 12

in Fig. 1; specification at page 5, lines 13 to 16, paragraph [0022]), the method comprising when the fuel cell system is starting up, heating coolant in the cooling circuit via the heat exchanger using heat stored in the adsorption accumulator, with the fuel cell waste products being fed to the adsorption accumulator at the same time, the fuel cell waste products including waste gas (e.g., Fig. 1, specification at page 5, lines 18 to 30, paragraphs [0023] to [0024]), and in normal operation, feeding heat to the adsorption accumulator via the heat exchanger, with the coolant in the cooling circuit heated by the fuel cell unit being fed to the heat exchanger (e.g., Fig. 2, specification at page 6, lines 8 to 18, paragraph [0026]).

Dependent claim 12 recites the fuel cell system as recited in claim 5 further comprising an actuator coupled between the fuel cell and the adsorption accumulator (e.g., actuator 11 in Fig. 1; specification at page 5, lines 13 to 16, paragraph [0022]), the actuator being adapted to pass the fuel cell waste products from the first line to the second line during a cold start of the fuel cell system (e.g., Fig. 1, specification at page 5, lines 21 to 25, paragraph [0022]) and to prevent the passage of the fuel cell waste products from the first line to the second line after the cold start (e.g., Fig. 2, specification at page 6, line 22 to page 7, line 3, paragraphs [0027] to [0028]).

Dependent claim 13 recites the fuel cell system as recited in claim 12 further comprising a second actuator located between the fuel cell and the heat exchanger (e.g., actuator 6 in Fig. 1; specification at page 5, lines 6 to 9, paragraph [0021]), the second actuator adapted to pass coolant heated by the fuel cell to the heat exchanger to charge the adsorption accumulator after the cold start (e.g., Fig. 2, specification at page 6, lines 8 to 13, paragraph [0026]).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 5 to 14 stand rejected under 35 U.S.C. 102(b) as being anticipated by Honda et al. (JP 10-144333).

VII. ARGUMENTS

A. Rejections under 35 U.S.C. 102(b)

1. Claims 5, 6 and 9 to 14

Claim 5 and its dependent claims 6 and 9 to 14 stand rejected under 35 U.S.C. 102(b) as being anticipated by Honda et al.

Honda et al. discloses a fuel cell system that includes a fuel cell 2 having a heat exchanger part 25, an adsorber 5 for rapid warming of fuel cell 2, and a condensation evaporator 6 which is open for free passage to adsorber 5. (Computer translation of Honda et al., paragraph [0009]). Adsorber 5 includes a heat exchanging part 51 through which heat exchanging fluid flows into inside of a well-closed container 50. (Id., paragraph [0012]). Heat exchanging part 25 and heat exchanging part 51 are connected in series by a hydraulic circuit A. (Id., paragraph [0013]).

Claim 5 recites "[a] fuel cell system for mobile use comprising:

a fuel cell unit for generating electrical energy and fuel cell waste products;

a cooling circuit assigned to the fuel cell unit and having a heat exchanger downstream of the fuel cell unit;

an adsorption accumulator assigned to the fuel cell unit and forming a heat store adapted to release heat when adsorbing the fuel cell waste products, the adsorption accumulator being operatively thermally connected to the heat exchanger;

a first line connected to the fuel cell unit discharging the fuel cell waste products from the fuel cell unit; and

a second line connecting the first line to the adsorption accumulator for feeding the fuel cell waste products to the adsorption accumulator."

It is respectfully submitted that Honda et al. in no way discloses the requirement of claim 5 of "an adsorption accumulator assigned to the fuel cell unit and forming a heat store adapted to release heat when adsorbing the fuel cell waste products." (emphasis added). Adsorber 5 of Honda et al. in no way forms a heat store adapted to release heat when adsorbing the fuel cell waste products. The language of claim 5 as a whole clearly requires a system that is configured such that an adsorption accumulator adsorbs fuel cell waste products and releases heat upon

adsorbing the fuel cell waste products. Honda et al. completely fails to teach or disclose such a relationship between fuel cell 2 and adsorber 5 and does not even mention any use at all for waste products of fuel cell 2. Because Honda et al. fails to disclose a system that includes the relationship between a fuel cell and an adsorption accumulator as required by claim 5, Honda et al. does not teach each and every limitation of claim 5 and thus Honda et al. does not anticipate claim 5.

It is also respectfully submitted that Honda et al. not disclose the requirements of claim 5 of "a first line connected to the fuel cell unit discharging the fuel cell waste products from the fuel cell unit" and "a second line connecting the first line to the adsorption accumulator for feeding the fuel cell waste products to the adsorption accumulator." The Office Action does not even attempt to point out in Honda et al. where the "first line" or the "second line" of claim 5 are disclosed in Honda et al. The only connection between fuel cell 2 and adsorber 5 described in Honda et al. is hydraulic circuit A, which he Examiner alleges corresponds to the "cooling circuit" of claim 5, and which clearly is not the "first line" or the "second line" required by claim 5. The language of claim 5 requires that the claimed "cooling circuit" be distinct from both the claimed "first line" and "second line." Additionally, Honda et al. does not even mention what happens with waste products of fuel cell 2 and thus in no way discloses the claimed relationship between a fuel cell, a first line, a second line and an adsorption accumulation required by claim 5.

The Examiner asserts in the June 2, 2009 Advisory Action, citing paragraphs [0018] to [0019] of Honda et al., that "[t]he fuel cell waste is the water that is generated by the reactants in the fuel cell and later pumped out of the fuel cell by pump (40) and flows into the adsorbent chamber (52) of the adsorber (5)." It is respectfully submitted that the Examiner has misinterpreted paragraphs [0018] to [0019] of Honda et al. Although, fuel cell 2 of Honda et al. generates water, the water generated by anode 22 of fuel cell 2 is not the heat exchanging fluid circulated by hydraulic circuit A. As shown in Fig. 2 of Honda et al., the heat exchanging fluid passing through heat exchanger 25 of fuel cell 2 is independent of any water produced in anode 22 of fuel cell 2. This is further supported by the text of the English Abstract of Honda et al., which states:

Accordingly, air and hydrogen are supplied to a fuel cell 2 so as to start power

> generation. Simultaneously, heat exchanging fluid at about room temperature flows through the heat exchanging part 51 of an adsorbe[r] 5 so as to cool absorbing agent 52 to adsorb water.

(Honda et al., English abstract). If the water generated by fuel cell 2 was the heat exchanging fluid, no heat exchanging fluid could flow through heat exchanging part 51 at the precise moment that the fuel cell is started.

Based on the foregoing, withdrawal of the rejection under 35 U.S.C. 102(b) of claim 5 and its dependent claims 6 and 9 to 14 is respectfully requested.

2. Claim 12: Argued Separately

With further respect to dependent claim 12, Honda et al. does not disclose "an actuator coupled between the fuel cell and the adsorption accumulator, the actuator being adapted to pass the fuel cell waste products from the first line to the second line during a cold start of the fuel cell system and to prevent the passage of the fuel cell waste products from the first line to the second line after the cold start" as recited in claim 12. The three-way-type selector valve 41, which the Examiner alleges corresponds to the "actuator" of claim 12, is a part of hydraulic circuit A of Honda et al., which the Examiner alleges corresponds to the "cooling circuit" of claim 5, and thus is in no way has a structure that is adapted to interact with the claimed "first line" and the "second line" as specifically required by claim 12.

For this reason also, withdrawal of the rejection under 35 U.S.C. 102(b) of claim 12 is respectfully requested.

3. Claim 13: Argued Separately

With further respect to dependent claim 13, Honda et al. does not disclose "a second actuator located between the fuel cell and the heat exchanger, the second actuator adapted to pass coolant heated by the fuel cell to the heat exchanger to charge the adsorption accumulator after the cold start" as required in claim 13. The three-way-type selector valve 42, which the Examiner alleges corresponds to the "second actuator" of claim 13, is adapted to pass heat exchanging fluid from heat exchanging part 51, which the Examiner alleges corresponds to the claimed "heat exchanger," to fuel cell 2. As shown by the arrow between valve 42 and heat

exchanging part 51 in Fig. 1 of Honda et al., valve 42 is not adapted to pass any fluid from fuel cell 2 to heat exchanging part 51 and thus is not arranged within the claimed system as required by claim 13.

For this reason also, withdrawal of the rejection under 35 U.S.C. 102(b) of claim 12 is respectfully requested.

4. Claims 7 and 8: Argued Separately

Claim 7 and its dependent claim 8 stand rejected under 35 U.S.C. 102(b) as being unpatentable as anticipated by Honda et al.

Claim 7 recites "[a] method for operating a fuel cell system for mobile use, the fuel cell system including a fuel cell unit for generating electrical energy and fuel cell waste products, a cooling circuit assigned to the fuel cell unit and having a heat exchanger downstream of the fuel cell unit, an adsorption accumulator assigned to the fuel cell unit and forming a heat store adapted to release heat when adsorbing the fuel cell waste products, the adsorption accumulator being operatively thermally connected to the heat exchanger, a first line connected to the fuel cell unit for discharging the fuel cell waste products from the fuel cell unit, and a second line connecting the first line to the adsorption accumulator for feeding the fuel cell waste products to the adsorption accumulator, the method comprising:

when the fuel cell system is starting up, heating coolant in the cooling circuit via the heat exchanger using heat stored in the adsorption accumulator, with the fuel cell waste products being fed to the adsorption accumulator at the same time, the fuel cell waste products including waste gas, and

in normal operation, feeding heat to the adsorption accumulator via the heat exchanger, with the coolant in the cooling circuit heated by the fuel cell unit being fed to the heat exchanger."

It is respectfully submitted that Honda et al. does not disclose the step of claim 7 of "when the fuel cell system is starting up, heating coolant in the cooling circuit via the heat exchanger using heat stored in the adsorption accumulator, with the fuel cell waste products being fed to the adsorption accumulator at the same time, the fuel cell waste products including

waste gas." Honda et al. does not disclose feeding any waste products from fuel cell 2 to adsorber 5. As discussed above with respect to the corresponding apparatus claim, Honda et al. does not even mention any use at all for waste products of fuel cell 2. Because Honda et al. fails to disclose this step of feeding waste products from a fuel cell to an adsorption accumulator as required by claim 7, Honda et al. does not teach each and every limitation of claim 7 and thus Honda et al. does not anticipate claim 7.

The Examiner asserts in the June 2, 2009 Advisory Action, citing paragraphs [0018] to [0019] of Honda et al., that "[t]he fuel cell waste is the water that is generated by the reactants in the fuel cell and later pumped out of the fuel cell by pump (40) and flows into the adsorbent chamber (52) of the adsorber (5)." It is respectfully submitted that the Examiner has misinterpreted paragraphs [0018] to [0019] of Honda et al. Although, fuel cell 2 of Honda et al. generates water, the water generated by anode 22 of fuel cell 2 is not the heat exchanging fluid circulated by hydraulic circuit A. As shown in Fig. 2 of Honda et al., the heat exchanging fluid passing through heat exchanger 25 of fuel cell 2 is independent of any water produced in anode 22 of fuel cell 2. This is further supported by the text of the English Abstract of Honda et al., which states:

> Accordingly, air and hydrogen are supplied to a fuel cell 2 so as to start power generation. Simultaneously, heat exchanging fluid at about room temperature flows through the heat exchanging part 51 of an adsorbe[r] 5 so as to cool absorbing agent 52 to adsorb water.

(Honda et al., English abstract). If the water generated by fuel cell 2 was the heat exchanging fluid, no heat exchanging fluid could flow through heat exchanging part 51 at the precise moment that the fuel cell is started.

Based on the foregoing, withdrawal of the rejection under 35 U.S.C. 102(b) of claim 7 and its dependent claim 8 is respectfully requested.

CONCLUSION

It is respectfully submitted that the application is in condition for allowance. Favorable consideration of this appeal brief is respectfully requested.

Respectfully submitted,

DAVIDSON, DAVIDSON & KAPPEL, LLC

Dated: August 5, 2009

By: _____

John S. Economou
(Reg. No. 38,439)

DAVIDSON, DAVIDSON & KAPPEL, LLC
485 Seventh Avenue, 14th Floor
New York, NY 10018
Tel: (212) 736-1940
Fax: (212) 736-2427

APPENDIX A:

PENDING CLAIMS 5 to 14 of
U.S. APPLICATION SERIAL NO. 10/578,461

Claim 5 (previously presented): A fuel cell system for mobile use comprising:

a fuel cell unit for generating electrical energy and fuel cell waste products;

a cooling circuit assigned to the fuel cell unit and having a heat exchanger downstream of the fuel cell unit;

an adsorption accumulator assigned to the fuel cell unit and forming a heat store adapted to release heat when adsorbing the fuel cell waste products, the adsorption accumulator being operatively thermally connected to the heat exchanger;

a first line connected to the fuel cell unit discharging the fuel cell waste products from the fuel cell unit; and

a second line connecting the first line to the adsorption accumulator for feeding the fuel cell waste products to the adsorption accumulator.

Claim 6 (previously presented): The fuel cell unit as recited in claim 5 wherein the adsorption accumulator includes at least one of a zeolite, a silica gel and a metal hydride.

Claim 7 (previously presented): A method for operating a fuel cell system for mobile use, the fuel cell system including a fuel cell unit for generating electrical energy and fuel cell waste products, a cooling circuit assigned to the fuel cell unit and having a heat exchanger downstream of the fuel cell unit, an adsorption accumulator assigned to the fuel cell unit and forming a heat store adapted to release heat when adsorbing the fuel cell waste products, the adsorption

accumulator being operatively thermally connected to the heat exchanger, a first line connected to the fuel cell unit for discharging the fuel cell waste products from the fuel cell unit, and a second line connecting the first line to the adsorption accumulator for feeding the fuel cell waste products to the adsorption accumulator, the method comprising:

when the fuel cell system is starting up, heating coolant in the cooling circuit via the heat exchanger using heat stored in the adsorption accumulator, with the fuel cell waste products being fed to the adsorption accumulator at the same time, the fuel cell waste products including waste gas, and

in normal operation, feeding heat to the adsorption accumulator via the heat exchanger, with the coolant in the cooling circuit heated by the fuel cell unit being fed to the heat exchanger.

Claim 8 (previously presented): The method as recited in claim 7 wherein the adsorption accumulator includes at least one of a zeolite, a silica gel and a metal hydride.

Claim 9 (previously presented): The fuel cell system as recited in claim 5 the fuel cell waste products include water vapor and the adsorption accumulator is adapted to produce thermal energy by bonding the water vapor.

Claim 10 (previously presented): The fuel cell system as recited in claim 9 wherein the heat exchanger is adapted to transfer the thermal energy produced by the adsorption accumulator from the adsorption accumulator to the cooling circuit.

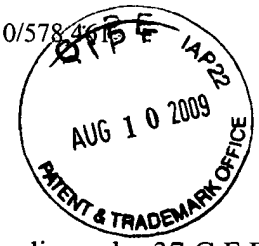
Claim 11 (previously presented): The fuel cell system as recited in claim 10 wherein the cooling

circuit is adapted to transfer the thermal energy produced by the adsorption accumulator to the fuel cell to facilitate a cold start of the fuel cell.

Claim 12 (previously presented): The fuel cell system as recited in claim 5 further comprising an actuator coupled between the fuel cell and the adsorption accumulator, the actuator being adapted to pass the fuel cell waste products from the first line to the second line during a cold start of the fuel cell system and to prevent the passage of the fuel cell waste products from the first line to the second line after the cold start.

Claim 13 (previously presented): The fuel cell system as recited in claim 12 further comprising a second actuator located between the fuel cell and the heat exchanger, the second actuator adapted to pass coolant heated by the fuel cell to the heat exchanger to charge the adsorption accumulator after the cold start.

Claim 14 (previously presented): The fuel cell system as recited in claim 12 wherein the actuator is a three-way valve.



APPENDIX B

Evidence Appendix under 37 C.F.R. §41.37 (c) (ix):

No evidence pursuant to 37 C.F.R. §§1.130, 1.131 or 1.132 and relied upon in the appeal has been submitted by appellants or entered by the examiner.

APPENDIX C

Related proceedings appendix under 37 C.F.R. §41.37 (c) (x):

As stated in "2. RELATED APPEALS AND INTERFERENCES" of this appeal brief, appellants, their legal representatives, and assignee are not aware of any appeal or interference that directly affects, will be directly affected by, or will have a bearing on the Board's decision in this appeal.